

SECTION 7 GUIDELINES - Snake River Basin Office
Spalding's catchfly (Threatened)
(*Silene spaldingii*)

I. BACKGROUND¹

Legal Status

Silene spaldingii was proposed as threatened on December 3, 1999 (64 FR 67814). Critical habitat was not included in the proposed rule, although critical habitat may be designated for *S. spaldingii* in the future – on April 24, 2000, the Service published a proposed rule finding that it is prudent to designate critical habitat for *S. spaldingii*.

Species Description

A member of the pink or carnation family (Caryophyllaceae), *Silene spaldingii* is a long-lived perennial herb with four to seven pairs of lance-shaped leaves and a spirally arranged inflorescence (group of flowers) consisting of small greenish-white flowers. The foliage is lightly to densely covered with sticky hairs. Reproduction is by seed only; *S. spaldingii* does not possess rhizomes or other means of vegetative reproduction (Lesica 1992). Bumblebees, especially *Bombus fervidus*, are the most important pollen vectors of *S. spaldingii* because of their size, hairiness, and frequency of visitation (Lesica and Heide1 1996). Plants range from approximately 2 to 6 decimeters (dm) (8 to 24 inches (in)) in height (Lichthardt 1997). *Silene spaldingii* plants generally flower from mid-July through August (Gamon 1991). Fruits mature in August to September.

This species is known to exhibit prolonged dormancy (i.e., plants may not come up for one to several years). Lesica (1997) found that most plants spend nearly half their summers in dormant condition. Germination probably occurs in fall as well as spring. Rosettes are formed the first year, after which vegetative stems are produced. Flowering usually occurs during or after the third season (Lesica 1997). Existing plants send up new vegetation in mid-May and typically become senescent in September (Lesica, undated).

Silene spaldingii differs from the related, common species *S. scouleri* by having petal blades 2 millimeters (mm) (0.08 in) in length; *Silene scouleri* has deeply lobed petal blades that are 6 to 7 mm (0.24 to 0.28 in) long. *Silene douglasii* also occurs with *S. spaldingii* in some areas but typically has multiple, slender stems, narrower leaves, and is rarely sticky-pubescent (Lichthardt 1997).

¹Most of the information in these guidelines is summarized from the proposed rule for *Silene spaldingii* (64 FR 67814). Please refer to that document and the references cited therein for more information.

Habitat

Silene spaldingii is typically found in mesic grassland habitats dominated by native perennial grasses, such as Idaho fescue (*Festuca idahoensis*) or rough fescue (*F. scabrella*). Rough fescue is present at some of the Montana *S. spaldingii* sites, but appears to be uncommon or absent from *S. spaldingii* sites in the other states, whereas Idaho fescue may be associated with *S. spaldingii* in Idaho, Oregon, Washington, and Montana. Other associated species include bluebunch wheatgrass (*Agropyron spicatum*), Sandberg's bluegrass (*Poa sandbergii*), Kentucky bluegrass (*Poa pratensis*), prairie junegrass (*Koeleria cristata*), needle-and-thread (*Stipa comata*), western needlegrass (*Stipa occidentalis*), mallow ninebark (*Physocarpus malvaceus*), snowberry (*Symphoricarpos albus*), Nootka rose (*Rosa nutkana*), western mugwort (*Artemisia ludoviciana*), black hawthorn (*Crataegus douglasii*), yarrow (*Achillea millefolium*), prairie smoke avens (*Geum triflorum*), sticky purple geranium (*Geranium viscosissimum*), western gromwell (*Lithospermum ruderales*), and arrowleaf balsamroot (*Balsamorhiza sagittata*) (Gamon 1991, Lichthardt 1997, Umatilla National Forest 1997, Montana Natural Heritage Program 1998, Oregon Natural Heritage Program 1998).

Depending on soil and moisture characteristics and past disturbance (e.g., fire history), some sites have few or no shrubs or trees present, whereas other sites may have large shrub thickets (e.g., *Symphoricarpos albus*, *Physocarpus malvaceus*, or *Rosa* spp.). Scattered individuals of Ponderosa pine (*Pinus ponderosa*) or Douglas- fir (*Pseudotsuga menziesii*) may be found in or adjacent to *S. spaldingii* habitat. Some *S. spaldingii* sites occur in relatively open stands of Ponderosa pine (Gamon 1991, Umatilla National Forest 1997). *Silene spaldingii* sites range from approximately 1,750 to 5,100 feet elevation (Oregon Natural Heritage Program 1998, Washington Natural Heritage Program 1998).

Plant associations include: *Festuca idahoensis*/*Agropyron spicatum*, *Festuca idahoensis*/*Koeleria cristata*, *Festuca idahoensis*/*Rosa nutkana*, *Festuca idahoensis*/*Symphoricarpos albus*, *Artemisia ludoviciana*/*Festuca idahoensis*, *Pinus ponderosa*/*Festuca idahoensis*, *Pinus ponderosa*/*Symphoricarpos albus*, *Festuca scabrella*/*Stipa comata*, *Physocarpus malvaceus*/*Symphoricarpos albus*, and *Symphoricarpos albus*/*Rosa* (Gamon 1991, Lichthardt 1997, Umatilla National Forest 1997, Montana Natural Heritage Program 1998, Oregon Natural Heritage Program 1998).

Soils are generally moderately deep to deep. Soils at *S. spaldingii* sites have been variously described as: loams, silty loams, glacial morainal deposits, gravelly silty loams, granitic, loamy basaltic, and loess. Slopes range from 0 to approximately 60 percent (Gamon 1991).

Summary of Threats

Any activities that may cause or result in ground disturbance should be considered as potential threats to *Silene spaldingii*. In addition, activities that can adversely impact plants or habitat including grazing, herbicides, trampling, and soil compaction are also threats to this species. Because *S. spaldingii* often occurs in small, isolated populations, its persistence and recovery may be threatened by natural and human-caused disturbances. The effects of grazing and other factors

are discussed below.

Please note that the following list is not all-inclusive; there may be other activities that can adversely affect this species that are not specifically discussed here. (Refer to the proposed rule for more information on threats.)

Grazing

Sexual reproduction is necessary for the persistence of *S. spaldingii*. To reproduce, plants must be able to produce flowers, fruits, and seeds. Plants that are damaged or destroyed before seed set by factors such as grazing, trampling, etc. are not able to reproduce successfully. Livestock grazing can affect *S. spaldingii* directly by trampling and/or consumption of plants. In addition, grazing can affect *S. spaldingii* indirectly by soil compaction or by fostering the spread of non-native plant species (B. Heidel, pers. comm. 1999). Adverse effects of grazing may be mostly indirect because mature *S. spaldingii* plants are highly glandular and, thus, may not be very palatable to herbivores (Gamon 1991).

Recreation

The construction and maintenance of roads, trails, campgrounds, or other recreational facilities could adversely affect *S. spaldingii* habitat. Off-road vehicle use can also damage individuals and habitat.

Prescribed Fire

The effects of fire on *S. spaldingii* individuals and habitat depend on the season and intensity of the fire, fire return interval (i.e., years between fires), and on site characteristics (e.g., slope aspect, fuel moisture content, density, etc.). Fire during the active growing season for *S. spaldingii* could potentially adversely affect reproduction by damaging or destroying flowers and/or seeds of *S. spaldingii*. In addition, fire control activities (e.g., construction of firebreaks -- handlines, etc.) could adversely affect *S. spaldingii* by destroying habitat plants and facilitating weed invasion. Fire may benefit *S. spaldingii* in areas where populations are being encroached upon by woody species or where litter accumulation may be adversely affecting *S. spaldingii* (specifically, *Festuca scabrella* grasslands in northwest Montana, Lesica 1997). However, fire may result in the spread of exotic plant species. Moreover, prescribed fire should be used with caution because many colonies of *Bombus fervidus* occur near the ground (Lesica and Heidel 1996). In summary, although fire is a natural component of habitats in which *S. spaldingii* occurs, the current presence of invasive weeds and other factors necessitates thorough consideration of the potential effects.

Exotic Species

Non-native plant species are considered to be a major threat at nearly all sites supporting *S. spaldingii*. Threats to *S. spaldingii* posed by non-native plant species include competition for

water, nutrients, and light, in addition to competition for pollinators (Lesica and Heidel 1996). Artificial seeding of areas in or adjacent to habitat occupied by *S. spaldingii* may contain seed of exotic species known to threaten *S. spaldingii* (e.g., yellow star-thistle, *Centaurea solstitialis*, J. Hustafa, pers. comm. 1999). Thus, every effort should be made to ensure that seed used in proximity of *S. spaldingii* populations is free of exotic weeds.

Pollinator Impacts

Competition with other species for a limited number of pollinators (e.g., bumblebees (*Bombus* spp.)) may adversely affect fecundity and increase inbreeding depression in *S. spaldingii* (Lesica and Heidel 1996). Lesica and Heidel (1996) found, however, that pollination limitation is not likely to threaten large populations of *S. spaldingii* that occur in areas of native vegetation. Pollination limitation may threaten populations that occupy small areas surrounded by habitat that will not support bumblebee colonies (e.g., crop land).

Since bumblebees forage from early spring until late autumn, species flowering before *S. spaldingii* are important for attracting and maintaining bumblebee colonies in the area. Thus, maintaining high-quality habitat consisting of diverse plant communities for *S. spaldingii* (not just protecting individual plants) is critical.

Herbicide and Pesticide Use

Herbicides and pesticides may negatively impact this species, either directly or indirectly (e.g., via drift). Herbicides and pesticides may be used by Federal, State, or county agency staff (and other parties) near agricultural fields and roads or wherever herbicides are used to control noxious weeds. *Silene spaldingii* habitat could be present in or adjacent to such areas.

Pesticide spraying can negatively affect pollinators of *S. spaldingii*. The activity period of bumblebees makes them vulnerable to insecticide spraying from spring to late autumn.

Habitat Conversion and Destruction (Agriculture, Development, Road Construction, etc.)

Most of the suitable grassland habitat throughout the range of *S. spaldingii* has been converted to agriculture or urban/suburban development. In addition, the use of heavy equipment associated with agricultural or other activities (including construction and road or facility maintenance) can impact this species directly by destruction of individuals, or indirectly by soil compaction.

References

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Lesica, P. 1992. The effects of fire on *Silene spaldingii* at Dancing Prairie Preserve: 1992

progress report. The Nature Conservancy, Helena, Montana.

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Lesica, P. and B. Heidel. 1996. Pollination biology of *Silene spaldingii*. Montana Natural Heritage Program, Helena, Montana.

Lichthardt, J. 1997. Revised report on the conservation status of *Silene spaldingii* in Idaho. Idaho Department of Fish and Game, Conservation Data Center, Boise, Idaho.

Montana Natural Heritage Program. 1998. Element occurrence records for *Silene spaldingii*. Helena, Montana.

Oregon Natural Heritage Program. 1998. Element occurrence records for *Silene spaldingii*. Portland, Oregon.

Umatilla National Forest. 1997. Occurrence records for *Silene spaldingii* on the Pomeroy Ranger District, Umatilla National Forest.

Washington Natural Heritage Program. 1998. Element occurrence records for *Silene spaldingii*. Olympia, Washington.

Personal Communications

Telephone Conversation Record dated January 14, 1999 from Edna Rey-Vizgirdas, FWS to **Jerry Hustafa**, Wallowa Whitman National Forest. Subject: *Silene spaldingii* at Crow Creek, Oregon.

E-Mail dated February 16, 1999 from **Bonnie Heidel**, Montana Natural Heritage Program, to Edna Rey-Vizgirdas, FWS.

II. GUIDELINES - Protocol for Evaluating Project Effects

Ensure that any proposed or ongoing actions are consistent with these guidelines and recovery objectives.

- 1) No ground disturbing activities should be allowed within habitat occupied by this species.
- 2) Any activities that involve trampling or soil compaction (such as recreational activities, grazing, and maintenance or construction projects) should also be reviewed. (Refer to the

“Summary of Threats” section and the proposed rule for more information on activities that may affect this species.)

- 3) In general, *Silene spaldingii* should be considered when reviewing projects and activities that may affect suitable grassland habitats ranging from approximately 1,500 to 5,500 feet elevation. Suitable grassland habitats may be found at or below lower treeline, or within lower elevation forest types (e.g., where Ponderosa pine is the dominant species). See the “Habitat” section of these guidelines for more information.
- 4) In Idaho, potential *S. spaldingii* habitat may be found in or near the following areas managed by the Bureau of Land Management or Forest Service: Cottonwood Field Office (FO), Coeur d’Alene FO, Cascade FO, Clearwater National Forest (NF), Idaho Panhandle NF, Nez Perce NF, and Payette NF.
- 5) In eastern Oregon, potential *S. spaldingii* habitat occurs within the Baker FO, Umatilla NF, and Wallowa-Whitman NF.
- 6) Surveys should be conducted during the flowering season for *S. spaldingii* (i.e., when it is identifiable) in areas of known and/or potential habitat. Surveys should be required as part of section 7 consultation in areas containing suitable habitat (i.e., known or potential habitat) for *S. spaldingii*.
- 7) The condition of the habitat that supports *S. spaldingii* should be considered when evaluating potential project effects. Thus, the emphasis should be on conserving and maintaining the overall habitat in a suitable condition for this species, not just protecting individual plants.

Brief Summary of Survey Protocol:

- C Surveys should be conducted according to the Rare Plant Inventory Guidelines (attached).
- C Surveys should be conducted during the peak flowering period, generally from mid-July through early to mid-August. Surveys conducted at other times of year are not reliable and should not be accepted. Therefore, advance planning is essential to avoid unnecessary delay of Federal actions.
- C Surveys should be conducted by walking or otherwise closely scrutinizing potential habitat looking for flowering stalks, and should be performed by trained botanists familiar with conducting rare plant inventories. Known populations range in size from 1 to over 10,000 plants. Because of the potential for dormancy, *S. spaldingii* may not be visible during a "quick" one-time only survey. Several visits during the growing season, and in consecutive years, may be advisable.
- C Any new sites should be mapped and immediately reported to the state natural heritage

program (Oregon Natural Heritage Program or Idaho Conservation Data Center) and FWS (Snake River Basin Office).

Contact: Johnna Roy, Fish and Wildlife Biologist, Snake River Basin Office, U.S. Fish and Wildlife Service, at (208) 378-5348 for more information.